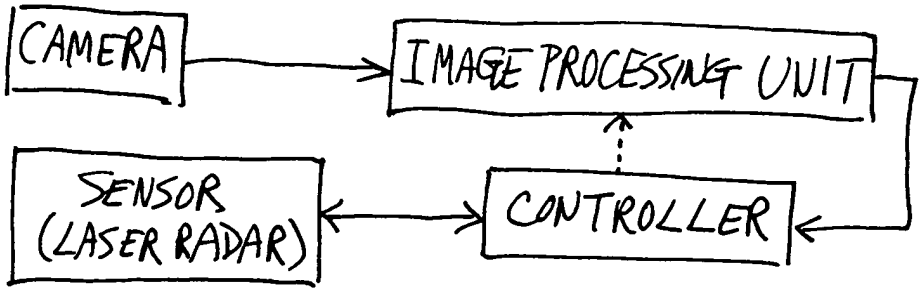

Fig. 1A

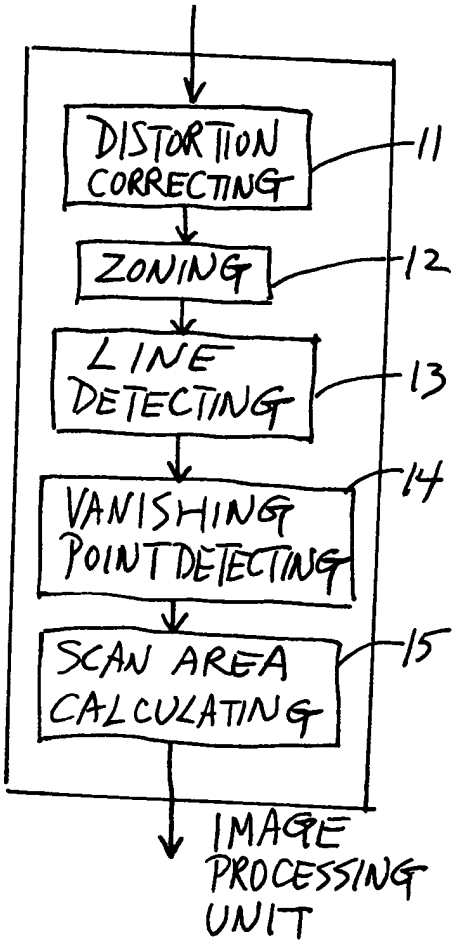

Fig. 1B

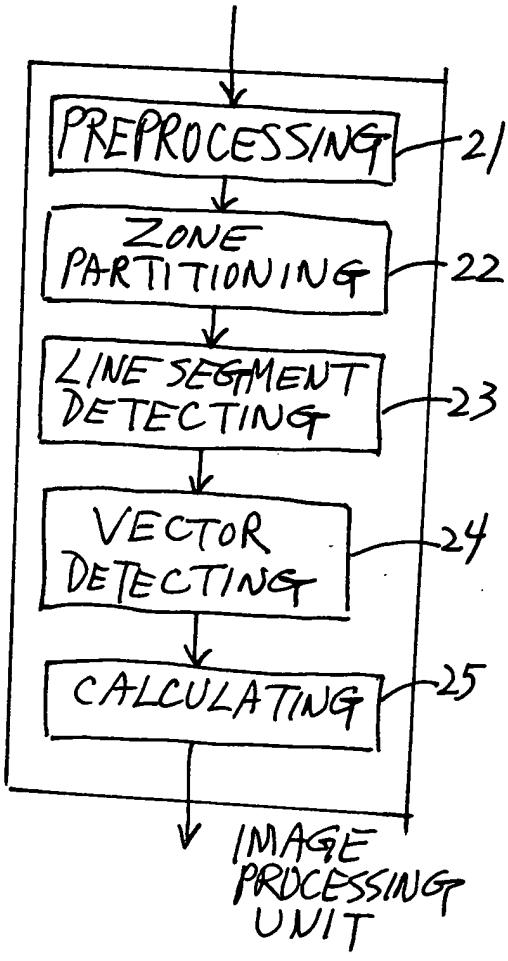

Fig. 1C

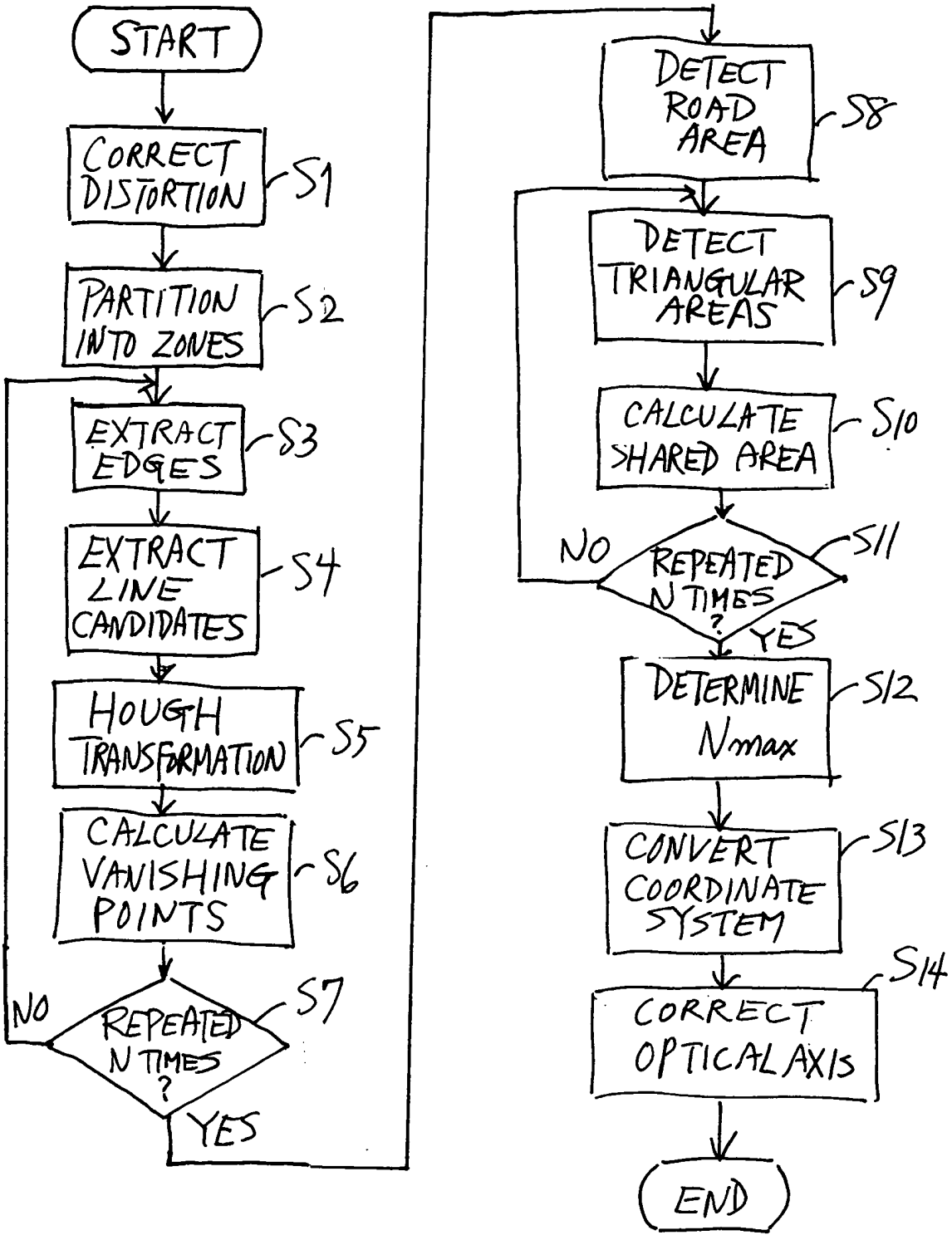
START
CORRECT DISTORTION
S1
PARTITION INTO ZONES
S2
EXTRACT EDGES
S3
EXTRACT LINE CANDIDATES
S4
HOUGH TRANSFORMATION
S5
CALCULATE VANISHING POINTS
S6
NO
REPEATED N TIMES ?
S7
YES
DETECT ROAD AREA
S8
DETECT TRIANGULAR AREAS
S9
CALCULATE SHARED AREA
S10
NO
REPEATED N TIMES ?
S11
YES
DETERMINE Nmax
S12
CONVERT COORDINATE SYSTEM
S13
CORRECT OPTICAL AXIS
S14
END

Fig. 2

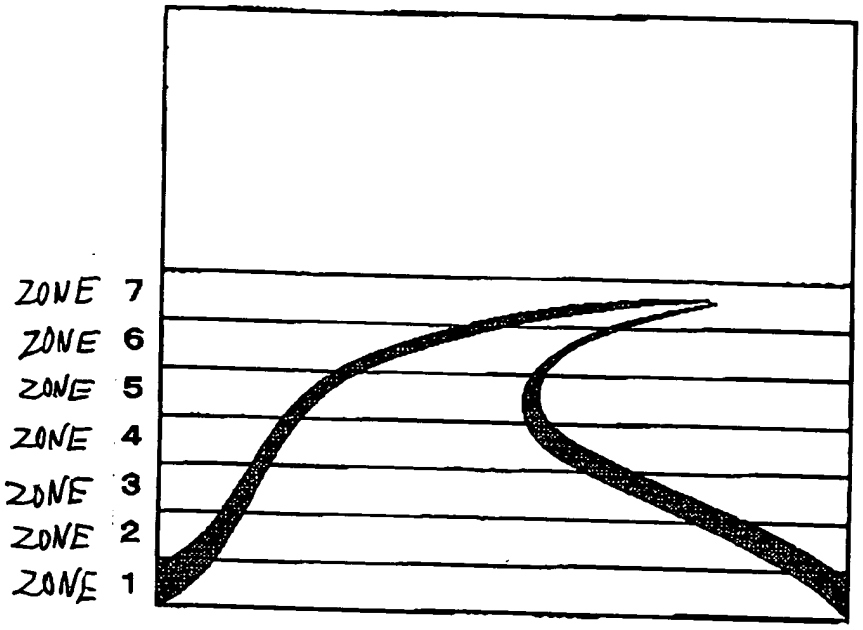
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

Fig. 3A

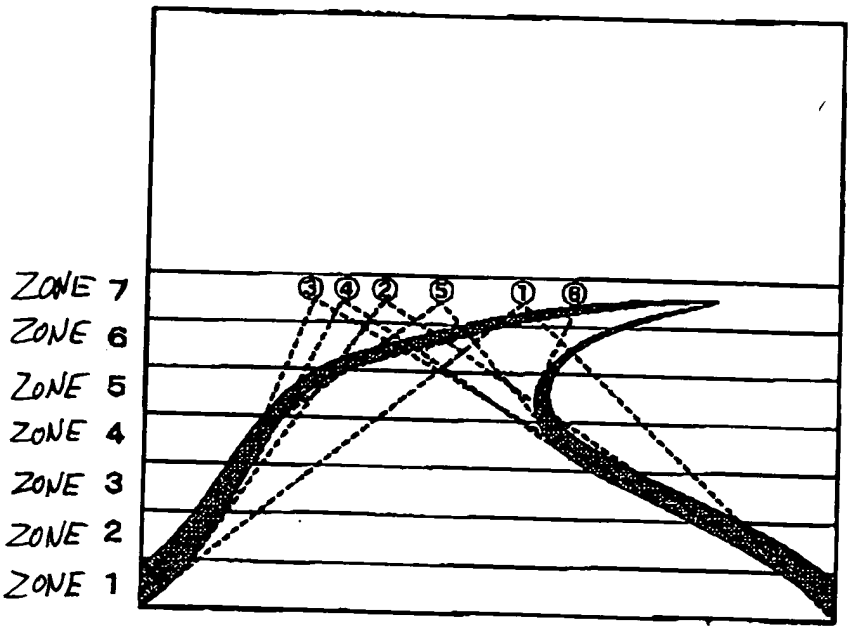
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1
③ ④ ② ⑤ ① ⑥

Fig. 3B

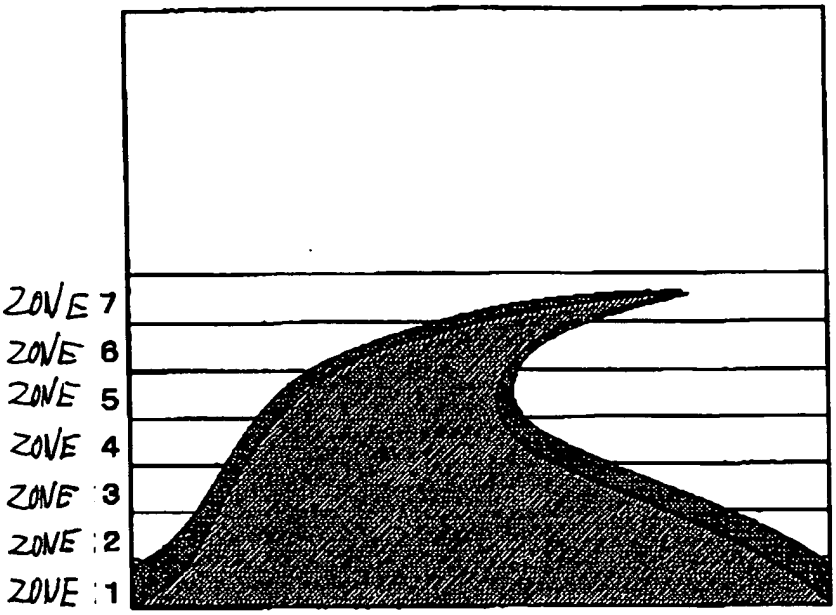
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

Fig. 4A

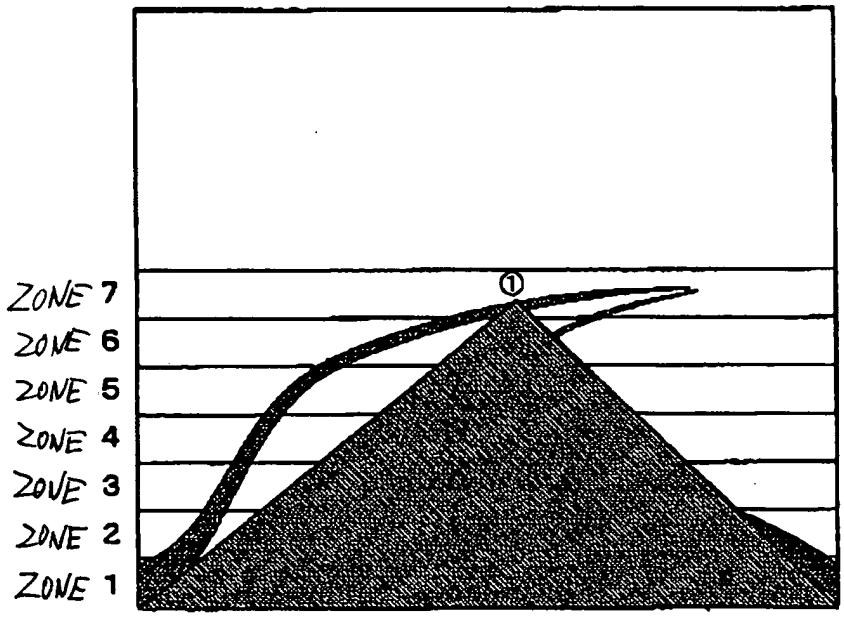
①
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

Fig 4B

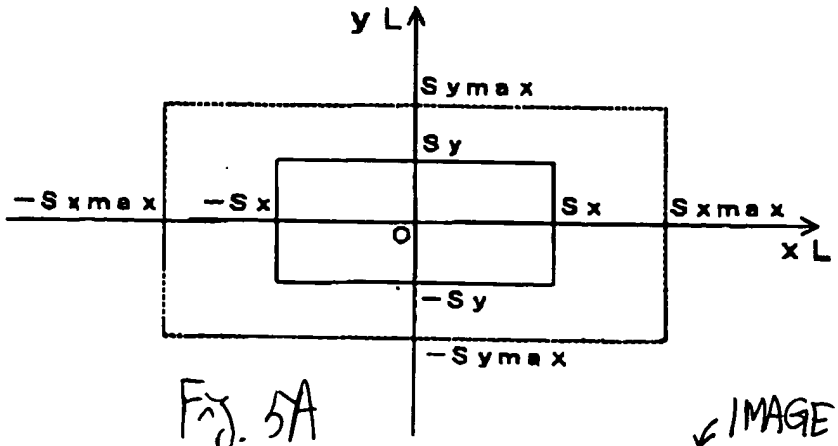

Fig. 5A

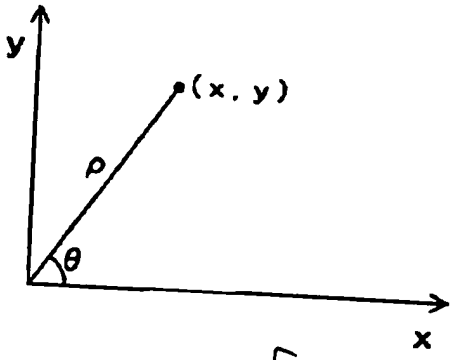

Fig. 5B

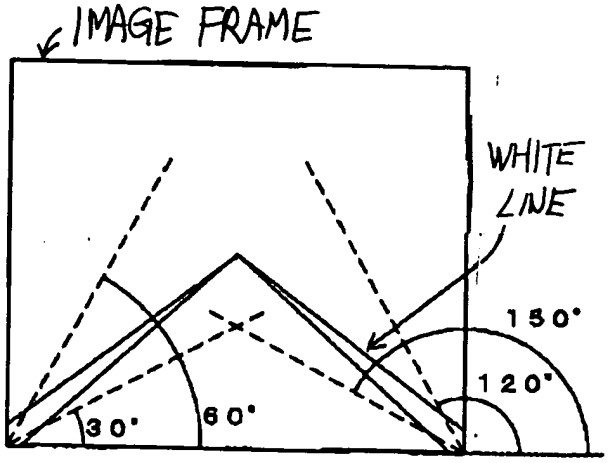

Fig. 5C

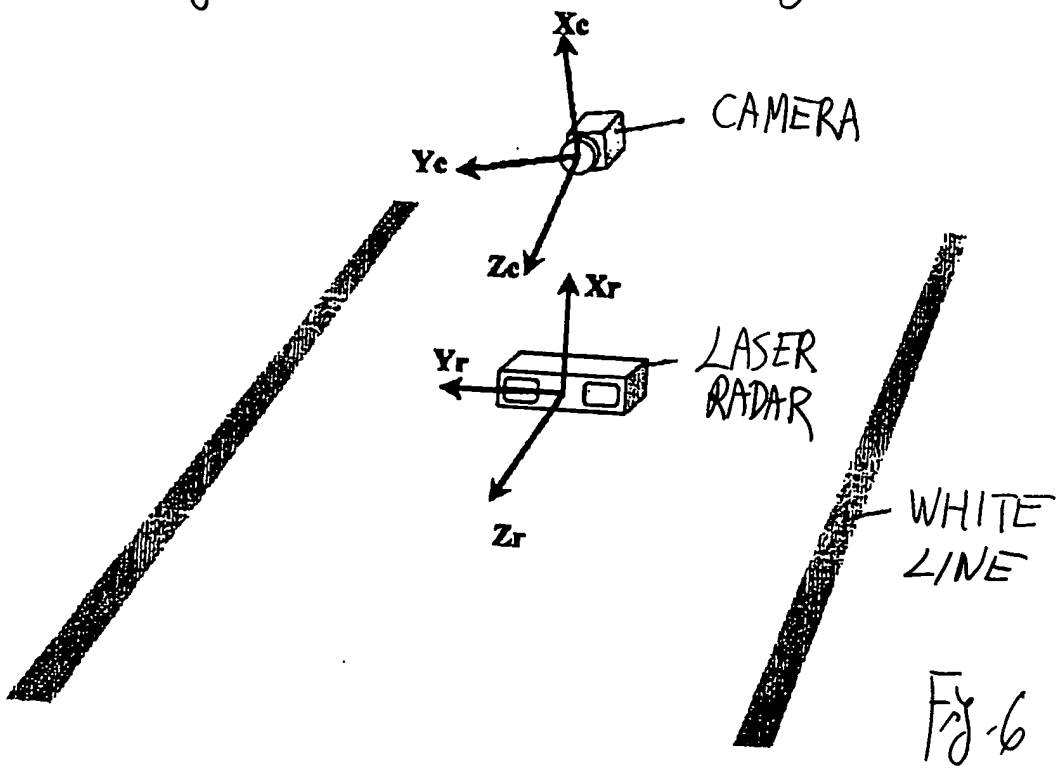

Fig. 6

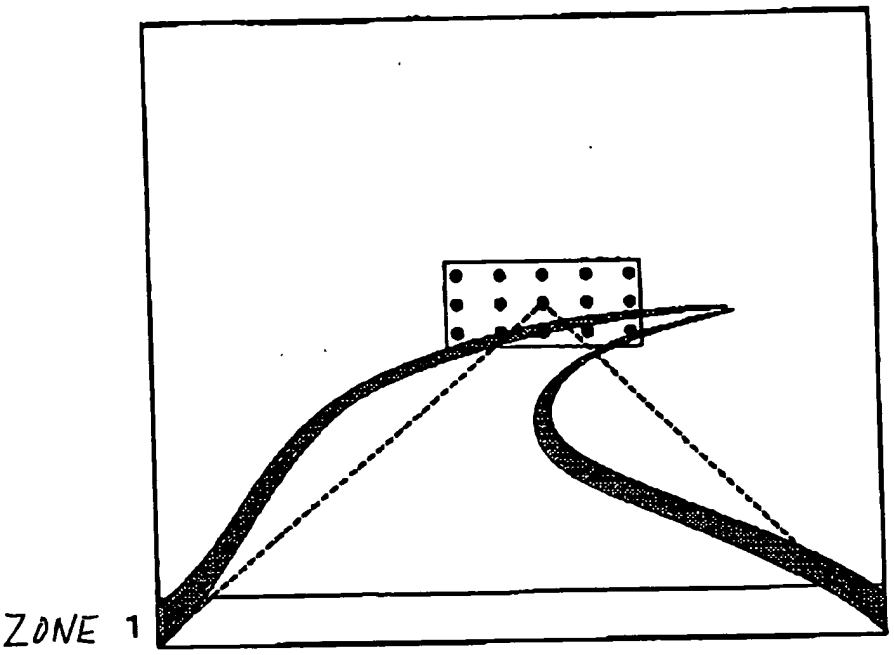

Fig. 7A

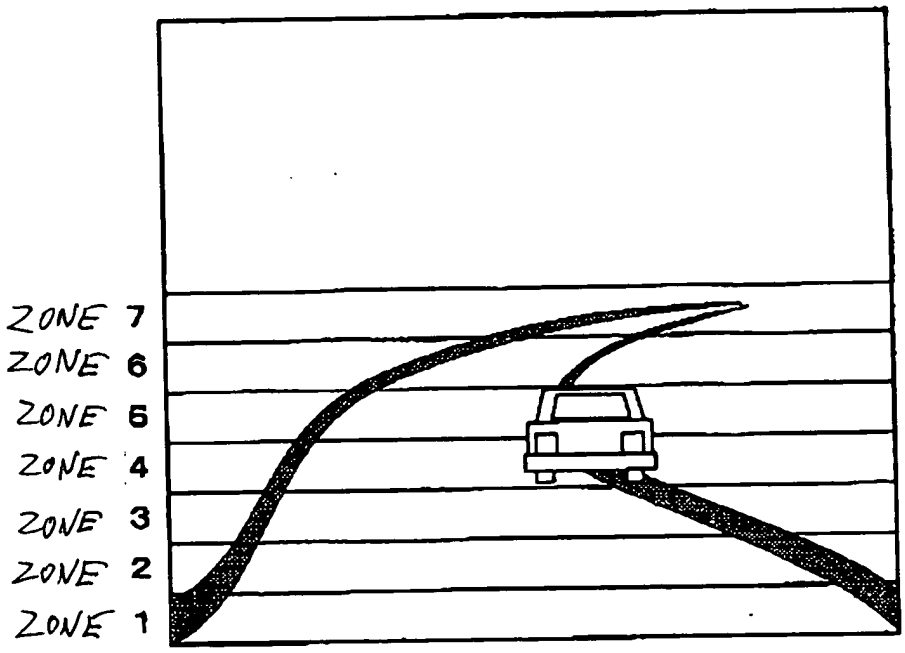

Fig. 7B

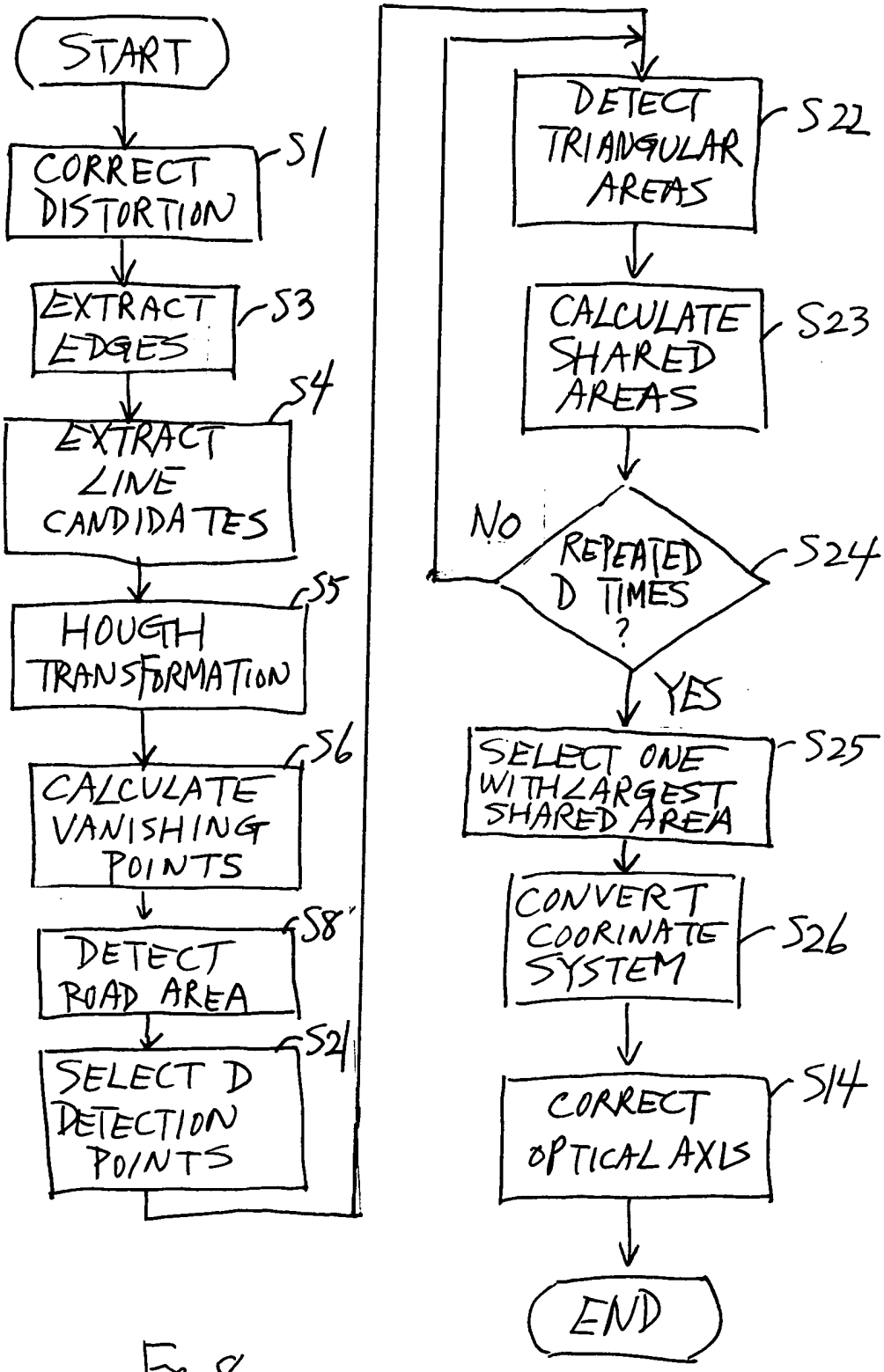
START
CORRECT DISTORTION
S1
EXTRACT EDGES
S3
EXTRACT LINE CANDIDATES
S4
HOUGH TRANSFORMATION
S5
CALCULATE VANISHING POINTS
S6
DETECT ROAD AREA
S8
SELECT D DETECTION POINTS
S21
DETECT TRIANGULAR AREAS
S22
CALCULATE SHARED AREAS
S23
No
REPEATED D TIMES ?
S24
YES
SELECT ONE WITH LARGEST SHARED AREA
S25
CONVERT COORINATE SYSTEM
S26
CORRECT OPTICAL AXIS
S14
END

Fig. 8

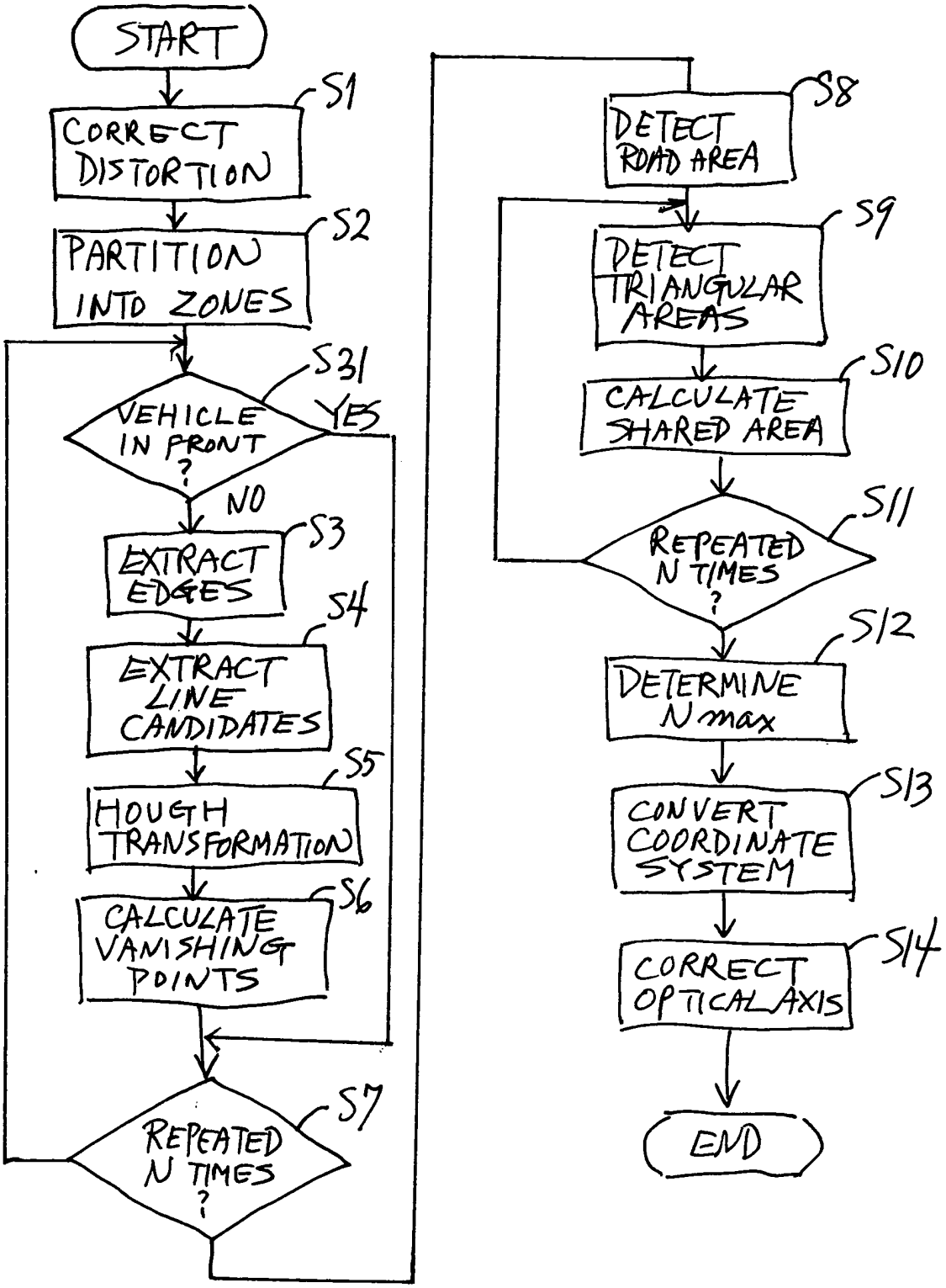
START
S1
CORRECT DISTORTION
S2
PARTITION INTO ZONES
S31
VEHICLE IN FRONT ?
YES
NO
S3
EXTRACT EDGES
S4
EXTRACT LINE CANDIDATES
S5
HOUGH TRANSFORMATION
S6
CALCULATE VANISHING POINTS
S7
REPEATED N TIMES ?
S8
DETECT ROAD AREA
S9
DETECT TRIANGULAR AREAS
S10
CALCULATE SHARED AREA
S11
REPEATED N TIMES ?
S12
DETERMINE N max
S13
CONVERT COORDINATE SYSTEM
S14
CORRECT OPTICAL AXIS
END

Fig. 9